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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 02/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,322

Applicant(s)

MORI ET AL.

Examiner

Hai C Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 1 and 12 are objected to because of the following informalities:

Claim 1:

- Line 9, "a developed image" should read --the developed image-- to clearly indicate the latent image that has just been developed.

Claim 12:

- Line 10, "a developed image" should read --the developed image-- to clearly indicate the latent image that has just been developed.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okino (U.S. 4,958,233) in view of Uji-Ie et al. (U.S. 4,332,884)

Okino, an acknowledged prior art, discloses an image recording apparatus comprising a casing section (photosensitive material magazine 14), which encases a light and heat sensitive recording material (light-sensitive and heat-developable material

Art Unit: 2861

S), an optical recording section (digital exposure unit 200), downstream of the casing section (see Fig. 1), which exposes the light and heat sensitive recording material to visible light (RGB lights), which has been fed from the casing section, for recording a latent image, a thermal developing section (thermal developing unit 40), downstream of the optical recording section, which develops the latent image by heating (using curved heating board 43), and an optical fixing section (image fixing unit 106), downstream of the thermal developing section, which irradiates UV light for fixing the developed image.

However, Okino fails to teach using a visible light to fix the developed image (claims 1, 12), and the exposure light having an intensity maximum in a wavelength range of 300 – 450 nm (claim 12), the maximum irradiation energy of the recording light being set between 0.01 to 50 mJ/cm² (claim 3).

Regardless, it is well known in the printing art to use an appropriate light for exposure and for fixing the developed image that would be most sensitive to the recording medium and that would promote a high-contrast image as evidenced by Uji-le et al., which discloses the use of an ultra-violet light for recording and a visible light for fixing an image formed on a light and heat sensitive recording medium, the maximum irradiation energy of the recording light being set at 0.15 mJ/cm² (see Examples 16 to 20 on column 24).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Okino with the aforementioned teachings of Uji-le et al. for the purpose of generating the high-contrast image.

With regard to claim 2, Okino further teaches the recording light having an intensity maximum at wavelength selected from a wavelength range of 300 to 1100 nm (RGB light).

With regard to claims 13-18, Okino teaches the light source being a semiconductor laser, and using different light sources of different wavelengths, all of semiconductor lasers.

With respect to claim 17, Okino further discloses the provision of a cutter (23), and the different sections being arranged in a vertical configuration.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okino in view of Uji-ie et al., as applied to claim 1 above, and further in view of Kobayashi et al. (U.S. 4,868,089).

Okino in view of Uji-ie et al. discloses all the basic limitations of the claimed invention except for the fixing light having intensity so as to provide an illumination of 10,000 to 50,000,000 luxes.

However, Kobayashi et al. discloses an image forming apparatus in which the light and heat developable recording material is imagewise exposed to a visible light (tungsten lamp), then heated at a temperature between 80° to 200° C, and fixed by a visible light (tungsten lamp) at an intensity of 10,000 luxes for a period of 0.5 to 300 seconds (col. 201, lines 40-44).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to set the fixing light intensity at at least 10,000 luxes as

taught by Kobayashi et al. in the modified device of Okino for the purpose of producing a positive image of high quality.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okino in view of Uji-Ie et al., as applied to claim 1 above, and further in view of Yamada et al. (U.S. 5,264,316).

Okino in view of Uji-Ie et al. discloses all the basic limitations of the claimed invention except for the range of variation of the heating temperature of the thermal developing section being set at most 5° C.

Regardless, it is known in the printing art that the temperature distribution in a heat developing device should be kept less than $\pm 1^{\circ}\text{C}$ as a requirement. Yamada et al., for example, discloses a heat-developable image recording material whose temperature distribution variation would be kept within a strict requirement of $\pm 1^{\circ}\text{C}$ during the heat development of the color latent image (see Table 1).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Okino, as modified by Uji-Ie et al., with the temperature distribution variation limitation as taught by Yamada et al. for the purpose of providing a sharp color image.

5. Claims 4, 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okino in view of Uji-Ie et al., as applied to claim 1 above, and further in view of Kubo et al. (U.S. 6,303,259 B1).

Art Unit: 2861

Okino in view of Uji-Ie et al. discloses all the basic limitations of the claimed invention except for the composition of the light and heat sensitive recording layer.

However, Kubo et al. discloses a method of recording an image on a heat and light-sensitive recording material, which includes providing visible light of three waves having different wavelengths for imagewise exposing the heat and light-sensitive recording material to form a latent image, heat developing the latent image, and an UV light to fix the developed image (col. 3, lines 36-59), the recording process being performed in the above specified sequences. Kubo et al. further teaches the recording light having an intensity maximum at wavelength selected from a wavelength range of 300 and 1100 nm (RGB light), the thermal developing temperature being of 50 to 200°C (col. 3, lines 60-64). Kubo et al. also discloses the heat and light-sensitive recording material having layer comprising color-forming component or dye-precursor being either enclosed in the core of the microcapsules or disposed in the shell of the microcapsules and a photo-polymerization composition or developer being again disposed outside of the microcapsules or enclosed in the microcapsules such that they are capable of reacting to each other to form color, the photo-polymerization composition further containing a photo-polymerization initiator (5) and a polymerizing substance (6). With regard to claims 10, 11, Kubo et al. teaches the heat and light-sensitive recording material being provided with a photo-curable heat and light-sensitive recording layer having a dye-forming coupler such as phenolic compounds capable of coupling with the oxydant (diazonium salts) to form a dye, such that light irradiation cures an irradiated portion of the heat and light-sensitive recording layer.

Response to Arguments

6. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new grounds of rejection as presented in this Office action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER
February 20, 2003